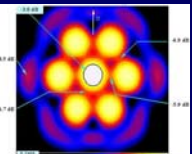




# ALFA Surveys as Complements to other Major Surveys

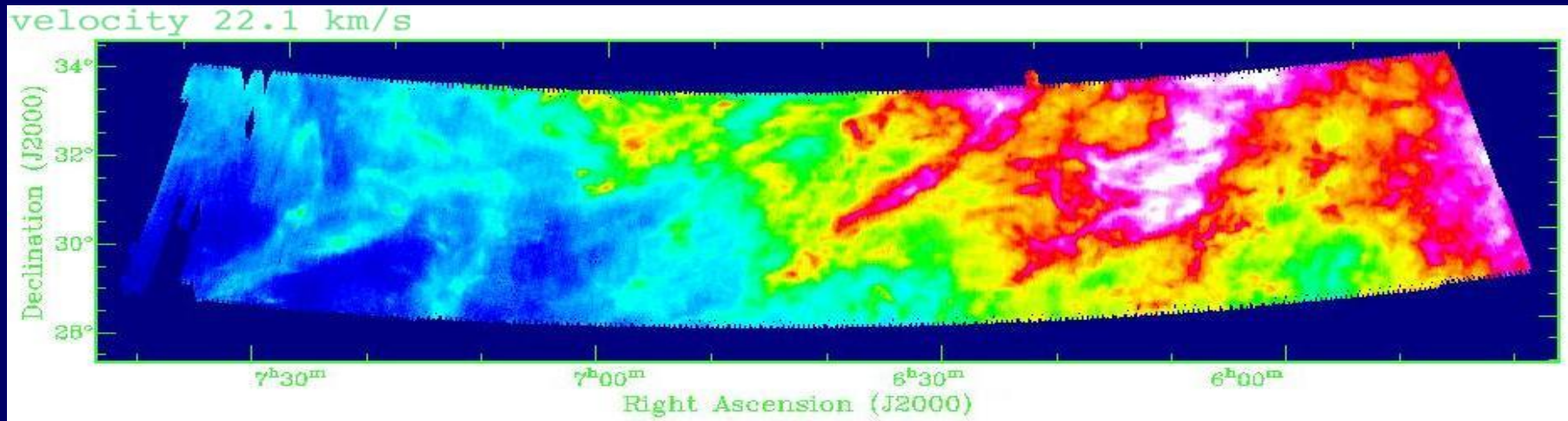
Martha P. Haynes

Cornell University and  
NAIC

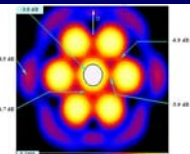




- ALFA surveys will produce legacy datasets

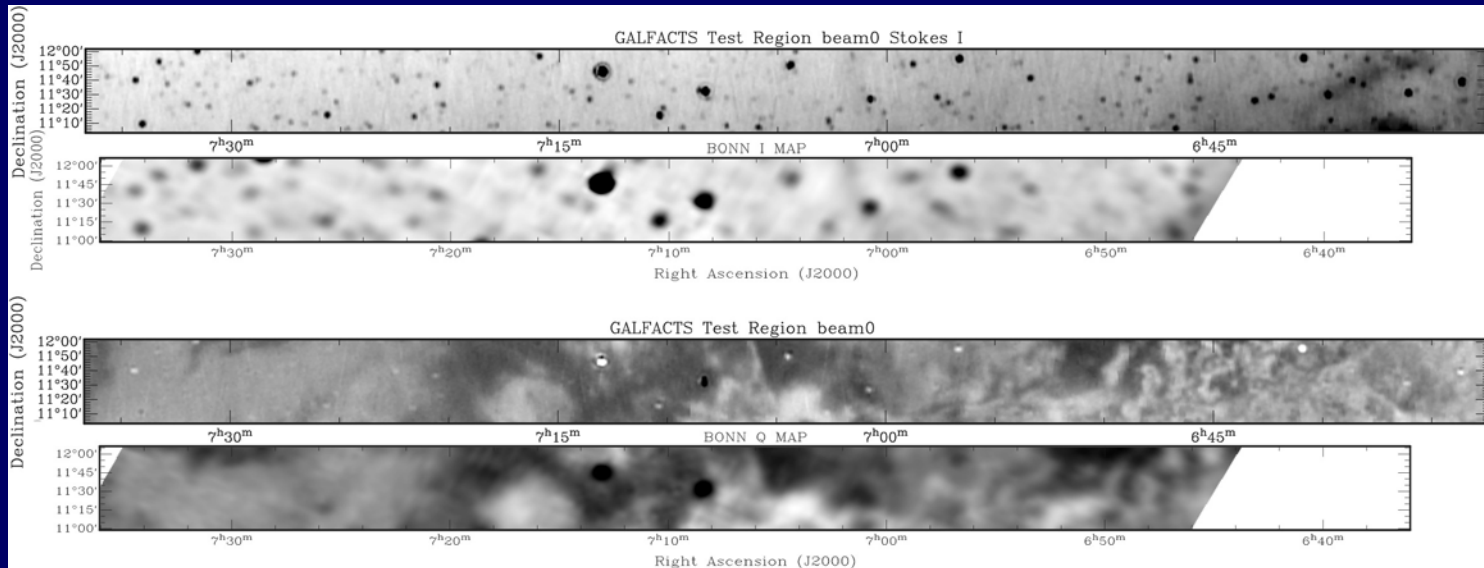


- GALFA: HI component of the ISM
- 10X better angular resolution than other wide area HI surveys
- Complements other surveys of ISM/Milky Way

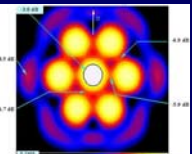




# • Example: GALFACTS



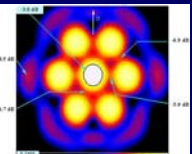
- Will complement the interferometric surveys of the Galactic Plane
- Will provide complete coverage from the Galactic Equator to the Pole; Full Stokes
- CMB Galactic foregrounds





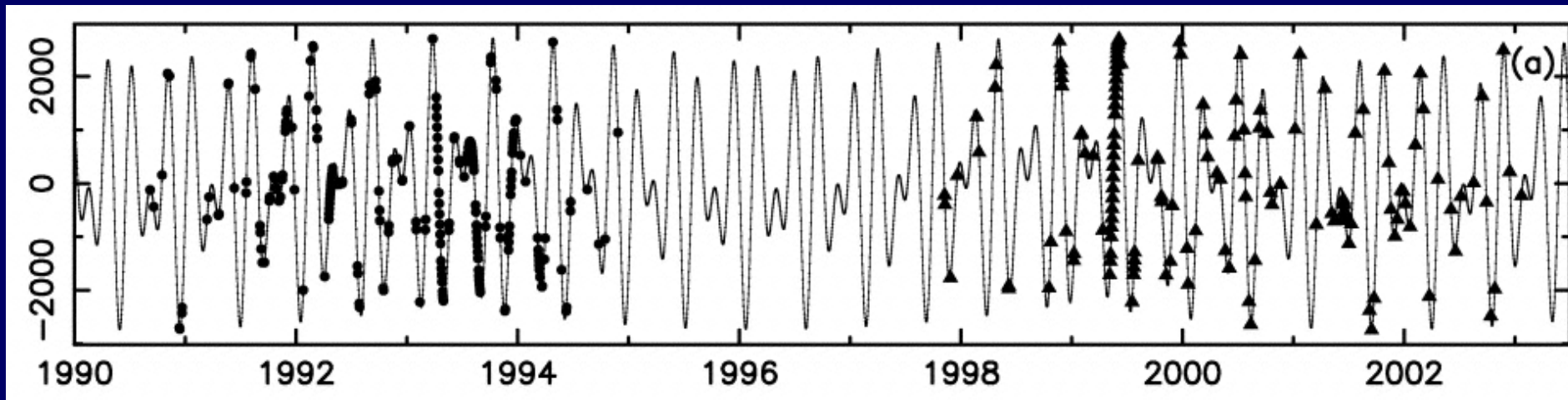
## Example: PALFA Surveys

- Tremendous data rate: Pbytes
- Collaboration with CIT  
<http://arecibo.tc.cornell.edu/arecibo>
- Goals
  - Identify high-quality pulsar candidates
  - Identify giant single-pulse events that are plausibly real after filtering out RFI
  - Identify commonly occurring RFI
- Final products: catalogs of identified pulsars and their associated folded pulse profiles

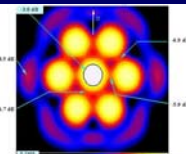




- Observations unique to survey epoch  
Once detected, pulsars must be timed



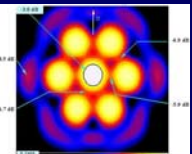
Timing of the PSR 1257+12  
revealed its planets







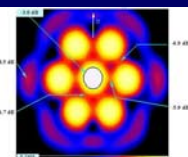
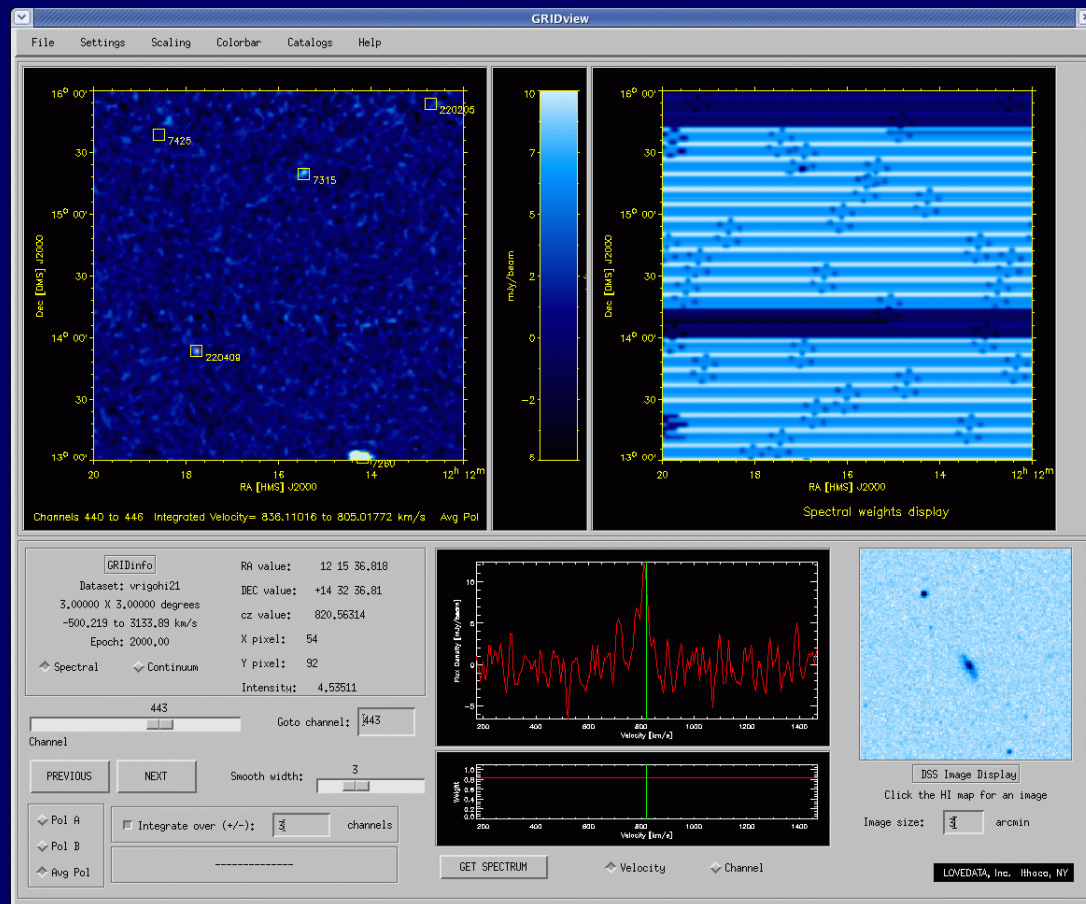
- **Observations unique to survey epoch**
  - Pulsar timing: Tests of general relativity
  - Statistical characterization of transients
  - Statistical characterization of RFI (helpful for science!)
  - Search dataset for *GLAST* counterparts





# Example: ALFALFA

- Incorporates comparison with other multiwavelength datasets (NVSS, SDSS) and databases (AGC, NED) during reduction process.
- Allows quick identification of targets for multiwavelength followup (HST, Spitzer, Palomar, WIYN) in coordinated team effort.



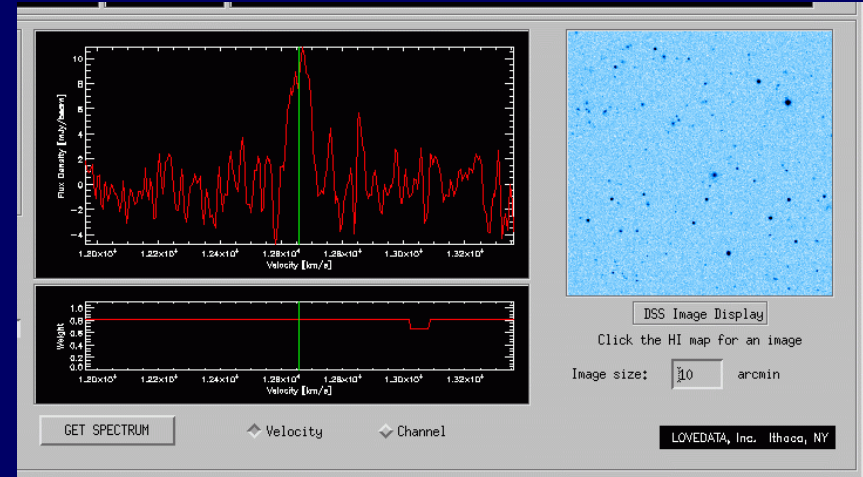


# ALFALFA

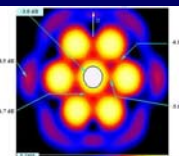
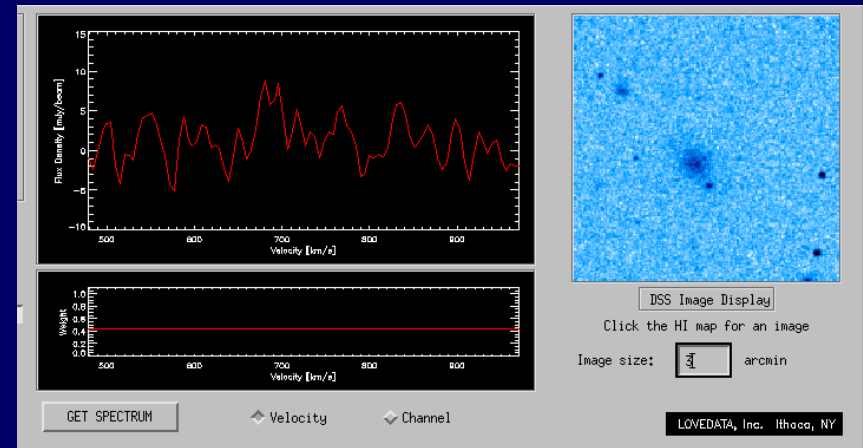


## Example: ALFALFA

- 2MASS galaxy @  
 $cz \sim 12659 \text{ km/s}$



- Low mass systems  
barely visible on  
SDSS; more  
prominent in  
DSS2blue







# ALFALFA



## ALFALFA Precursor Run:

Giovanelli *et al.* 2005 *AstroJ* 130, 2598 & 2613

- Data available!
- SQL database
- PHP interface
- Download catalog in XML/VOTable format
- Spectra
- Cross reference with DSS, 2MASS and SDSS images

a1946 Detections: Query Results - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://egg.astro.cornell.edu/precursor/detectionsresults.php?sourcen

User Record Viewer

**A1946: ALFALFA Precursor**

Query | View catalog | SQL Table Schema | VO Table | Velocity Distribution | ALFALFA

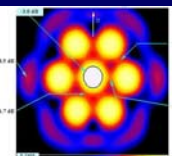
Galleries: Optical | 2MASS: J | H | K

a1946 Detections: Query Results

Number of entries returned: 8

Source name	R.A.(J2000)	Dec.(J2000)	$\epsilon_\alpha$	$\epsilon_\delta$	$\epsilon_z$	err stat	err sys	W	$\epsilon_w$	rms	Flux	$\epsilon_f$	Map Flux	LBW	Notes
	hh mm ss.s	dd mm ss	sec	"	km/s	km/s	km/s	km/s	km/s	mJy	Jy km/s	Jy km/s	Jy km/s		
<a href="#">HI014105.8+272007</a>	01 41 05.8	+27 20 07	1.3	18	280	2	0	27	4	2.03	0.64	0.06	0.00	L	*
<a href="#">HI014214.9+262202</a>	01 42 14.9	+26 22 02	1.7	23	364	1	0	21	1	1.82	1.06	0.08	0.00		*
<a href="#">HI014441.4+271707</a>	01 44 41.4	+27 17 07	0.7	10	430	2	0	38	2	1.82	2.02	0.15	2.89		*
<a href="#">HI014640.9+264754</a>	01 46 40.9	+26 47 54	2.3	31	370	2	0	21	3	2.09	0.68	0.06	0.00		*
<a href="#">HI014729.9+271958</a>	01 47 29.9	+27 19 58	0.0	0	351	2	0	117	3	1.88	54.39	3.81	0.00		*
<a href="#">HI014753.9+272555</a>	01 47 53.9	+27 25 55	0.0	0	436	2	0	175	3	1.77	69.25	4.85	0.00		*
<a href="#">HI015519.2+275645</a>	01 55 19.2	+27 56 45	1.0	13	219	1	0	21	2	2.11	0.79	0.07	0.00		*
<a href="#">HI021404.3+275302</a>	02 14 04.3	+27 53 02	0.8	12	594	2	0	81	3	1.91	3.87	0.29	6.28	L	*

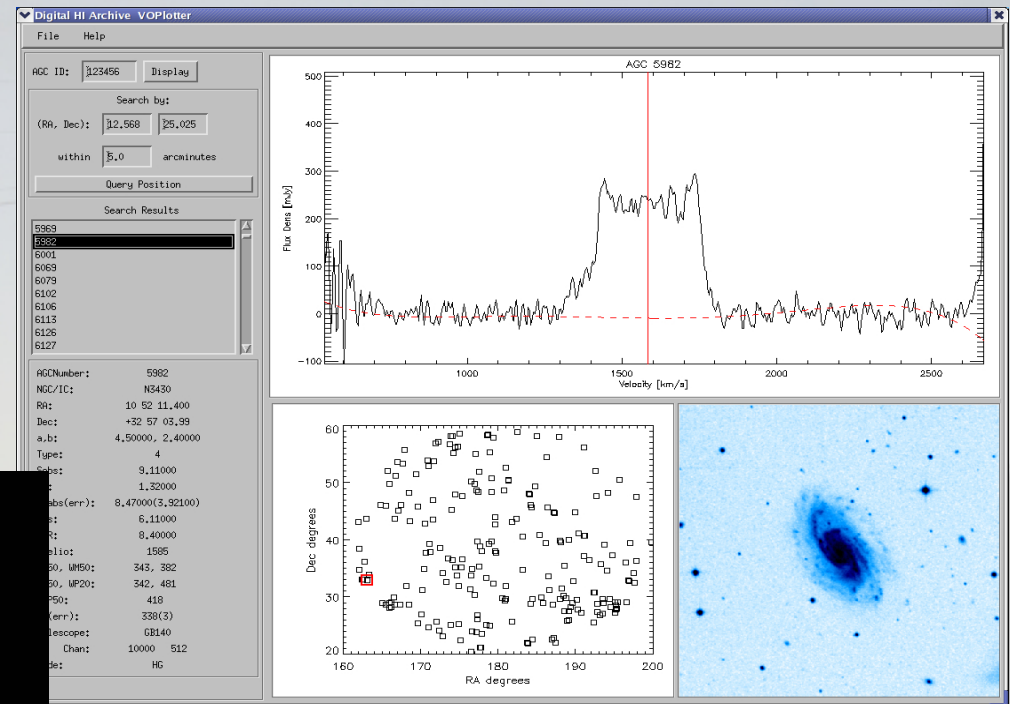
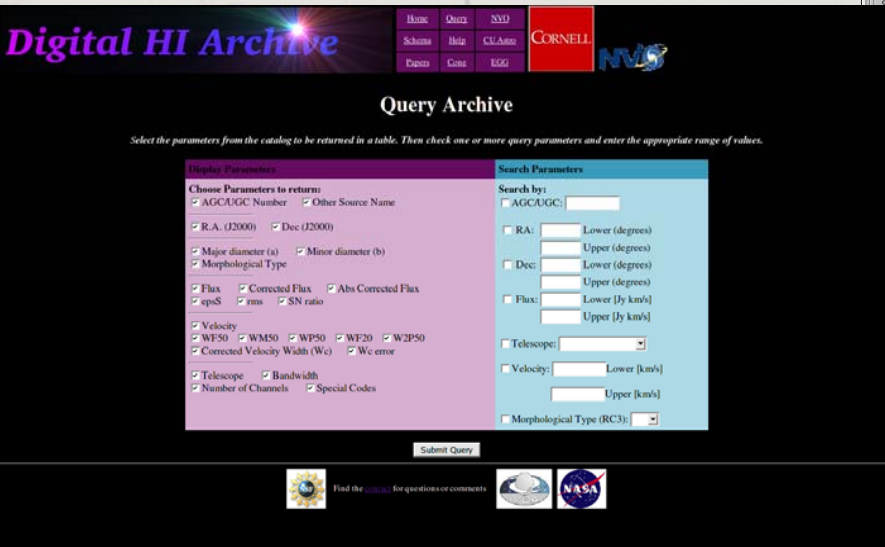
<http://egg.astro.cornell.edu/alfalfa/data>



# Existing HI Digital Archive (Springob et al 2005)



- Extension to/from ALFALFA
- SSAP for data cubes



Brian Kent's  
2005 NVO  
School project



HI Archive – VO Interface for IDL client

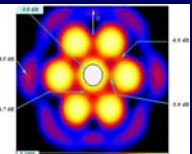


CORNELL



# ALFA Surveys as Complements to other Major Surveys

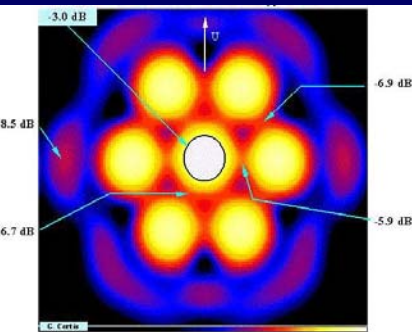
- Unique datasets, unlikely to be surpassed or years to come
- Multiwavelength applications required by science goals
- Collaborative team approach stimulates exchange
- Adoption of VO formats/protocols eases exchange







See the ALFA Science Posters in Session 187 plus some of the ALFALFA posters in Session 179 - today!



First ALFALFA Undergraduate Workshop  
Schenectady, New York  
July 2005

